JAPAN

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JIS B 9652 (1988) (English): Design rules for safety and sanitation of cake making machinery

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Fukuzawa Yukichi

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JAPANESE INDUSTRIAL STANDARD

Design Rules for Safety and Sanitation of Cake Making Machinery

JIS B 9652–1988

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JAPANESE INDUSTRIAL STANDARD J I S

Design Rules for Safety and Sanitation of Cake Making Machinery

B 9652-1988

1. Scope

This Japanese Industrial Standard specifies general matters concerning safety and sanitation countermeasures for design, manufacture, installation and operation of cake making machinery and its attachments, hereinafter referred to as the "machinery", in addition to JIS B 9650.

Remark: The cake making machinery specified in this Standard means the cake mixer, horizontal kneader, biscuit kneader, divider, bean jam kneader, rice cake making machine, pie roller, make-up machine, candy making machine, oven, frier, slicer, bean jam wrapper, depositer, make-up table, decorative injector and rice cracker dough cutter out of many machines to be used for general manufacturing process of Japanese cakes, Western cakes, "Senbei" (except rice cracker), "Arare" cracker, snack, wheat-gluten, and chocolates.

2. Definitions

For the purposes of this Standard, in addition to JIS B 9650, the following definitions apply:

(1) cake mixer A machine having agitator to be moved by power in inside to make cake dough by mixing, agitating and kneading of liquid, viscous body, or solid body raw materials and their mixtures.

(2) horizontal kneader A machine to make dough for cake of comparatively high viscosity by mixing, agitating and kneading the raw materials of wheat flour, fats and oils, sugar, etc. with water, salt, etc.

(3) biscuit kneader A machine to be used mainly for kneading of biscuit dough.

Applicable Standards:

JIS B 8243-Construction of Pressure Vessels

JIS B 8404-Gun Type Oil Burners

JIS B 8405-Low Pressure Air Atomizing Oil Burners

JIS B 8406-Rotary Oil Burners

JIS B 8415-General Safety Code for Industrial Combustion Furnaces

JIS B 9650-General Design Rules for Safety and Sanitation of Food Processing Machinery

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(4) divider A machine to divide mainly the cake dough, bean jam, etc. to a definite amount.

(5) bean jam kneading machine A machine to make bean jam, jam, marmalade, custard cream, etc. by agitating and sliding down (scrape) of raw materials in bean jam baking vessel to promote concentration of water content, permeation of sugar, gelatinization of starches, etc. There are mainly the following:

(a) vertical type bean jam kneading machine A bean jam kneading machine attached with an agitator from the above or the inclined above of bean jam baking vessel set horizontally.

(b) horizontal type bean jam kneading machine A bean jam kneading machine attached with an agitator to the shaft penetrating horizontally the U-type bean jam baking vessel.

(6) rice-cake making machine A machine to make rice-cakes or doughboys by working the steamed glutinous rice or nonglutinous rice.

(7) pie roller A machine to process the pie dough by means of plural rolling rollers and the conveyor capable of reciprocal moving.

(8) make-up machine A machine to conduct making-up of dough by varying amount of dough and pressure.

(9) candy making machine A machine to make candies, and caramels by dissolving, concentrating and cooling the raw materials such as sugar, "Mizuame" (millet jelly), etc. This contains the following:

(a) dissolving double ovens A machine to dissolve the raw material by heating up to a definite temperature.

(b) automatic vacuum concentration apparatus A machine to concentrate the raw material dissolved by heating by further heating and making vacuum.

(c) rotary cooling board A machine to knead and to cool by adding additives to the concentrated candy lump.

(d) wheat-gluten automatic feeding-out machine A machine to elongate the candy lump cooled to a suitable temperature to a rope state of a suitable thickness.

(e) forming machine A machine to cut and to form the wheat-gluten of rope state elongated to a suitable thickness.

(f) cooling machine A machine to cool the formed wheat gluten grains until a suitable temperature.

(10) oven A machine to calcine the dough pieces passed through forming or fermentation process. There are mainly the following:

(a) direct-fire type oven An oven of the system to combust directly the fuel in a calcining chamber.

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(b) direct-fire circulation type oven An oven of system to use by mixing the used gas and the new combustion gas, having heating apparatus not less than one set at inside or outside part of combustion chamber of which each heating apparatus has a burner.

The combustion gas is circulated through calcining chamber and heating apparatus by a blower, a part of used gas is removed by oven flow or vent device and the new combustion gas is supplemented.

(c) indirect-heating multi burner type oven An oven of system to heat with surrounding completely the burner part (generally, gas burner) so as the non-combusted gas and combusting matters do not enter the calcining chamber.

(d) indirect-heating circulation type oven An oven provided with the combustion duct, combustion chamber and circulation blower. The combustion gas circulates in this closed system while mixing with new, fresh combustion gas in the combustion chamber, its a part is relieved at exhaust gas opening or overflow part, the new, fresh combustion gas is supplemented, and the non-combusted gas or combustion refuse is so made not to enter the calcining chamber.

(e) electric type oven An oven of system to heat by generating heat by passing electricity through the resistance.

(11) frier A machine having mechanism for oil frying and oil reservoir.

(12) slicer A machine to cut to a definite size or to an arbitrary size. There are three types of reciprocating type slicer, hand slicer and circular type slicer.

(13) bean jam wrapping machine A machine to process for forming foods with taking bean jam, cream, jam, etc. as the inner materials and the cake dough or substrate similar thereto in shape as the outer skin materials.

(14) depositor A machine to extrude bean jam, cream, jam, cake dough, etc. continuously or to spot state.

(15) make-up table A machine to process for forming such as dividing, folding, twisting, cutting, etc. for doughs to be fed continuously or of sheet state by each kind device arranged on the conveyor.

(16) injector for decorative arrangement A machine to inject bean jam, cream, jam, etc. (including solid mixed matters).

(17) dough cutting machine for rice crackers A machine to cut dough for rice crackers.

3. Safety and Sanitation Countermeasures for Machine Division

3.1 Mixer

3.1.1 Cake Mixer

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3.1.1.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The mixer having a vertical agitating shaft shall be provided with the following safety devices:

(a) The safety guard to be set with surrounding the agitating shaft above the bowl shall be of such structure that as required, it can be opened and closed in large amount and when its opening part is opened, the power is shut off automatically.

(b) In the case of (a), it shall be of such structure that the power stopped once, even the opening part is closed, if the switch is not "closed" again, does not actuate again.

(c) In the case where a timer is set, it shall be moisture-proof.

(2) The vertical type mixer shall be provided individually with respective independent electric motor and its control device. Further, the moisture resistance shall be taken into consideration.

(3) The electric control board to be installed at the outer part of vertical type mixer shall be of drop preventive structure.

(4) The cooling or heating jacket of horizontal type mixer shall be provided with a such device that all pressures of cooling or heating medium do not exceed the set pressure.

(5) In the case where the mixer is set, it shall be so made that the position is not deviated and excessive vibrations are not generated.

3.1.1.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) The collar of bowl shall be of structure having no clearance and that attached to the outer surface of bowl shall be sealed.

(2) All surface members shall be those absorbing no raw materials of foods.

(3) It shall be of such structure that the oil does not drop down to food contacting part by oozing out from the bearing part of agitating shaft.

(4) The space sufficient so as all surfaces to be able to be cleaned shall be provided and it, not higher than the height of eyes where stains of upper surface can be confirmed.

(5) Excepting where it is set with contacting tightly, the mixer shall be provided with a clearance not less than 150 mm from the floor surface or such sufficient space that the cleaning is capable of being carried out easily, be provided.

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3.1.2 Horizontal Kneader

3.1.2.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The horizontal type kneader having an agitating-tank overturning device of automatic or manual operation, when the agitating tank is opened by 1/5 or more, shall be so made that if the worker does not use his both hands the agitator can not be started in actuation.

(2) The horizontal kneader attached with an automatic overturning device shall be of such structure that the opening state of agitating tank is not closed by not less than 4/5 of full opening and for completely close tightly the agitating tank, further the worker operates the electric motor for overturning by using both hands.

(3) In the case where the operation of speed conversion of horizontal kneader, the danger preventive method for worker shall be applied.

(4) In the case where the danger preventive device for the worker is set for the agitator during actuation, various countermeasures shall be applied so as the normal actuation of kneader not to be damaged.

(5) The horizontal type kneader shall be provided with respectively single independent electric motor and its controller.

Further, it shall be provided with operating switch with a key so that during the check and cleaning of machine, it can not be actuated by other worker.

(6) The attaching position of electric control manipulation board shall be a place where even the agitating tank is opened, the worker can see sufficiently. Other than stopping switch, the device for operation shall not be provided in double.

(7) A machine to return to the horizontal kneader the medium kind dough of dry bread, biscuit and other part cookie doughs shall be provided with an interlock device for danger prevention of worker.

(8) The timer to be used shall be moisture-proof.

(9) The electric control board to be installed on the outer-part of horizontal, kneader shall be water-proof.

(10) The valve and control device to actuate the cooling or heating medium in the jacket of horizontal kneader shall be attached at a position where the safety of worker is not interfered.

3.1.2.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

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(1) The parts such as agitator, its shaft, etc. shall be of such structure that their all surfaces can be made effectively clean according to the ordinary washing method.

(2) The end of agitator shaft shall be such structure that it contacts with such surface that the contact surface area with the surface of agitating tank becomes minimum to be capable of mixing suitably the all raw materials and is not separated by not less than the required.

(3) The agitator seal ring including the agitator hub shall be so made that it is detachable easily or can be exposed immediately so as the washing of parts to be easy.

(4) The surface of shaft attached with the seal ring shall be in accordance with the specifications of 4.1 of JIS B 9650.

(5) All packing seals shall be of water-leak preventive structure and further provided with a complete drain device to prevent the spreading of leaked water until the outer part when water leak is caused.

(6) The intake of raw materials shall be of suitable size for preventing leakage of raw material and, attached with the collar.

Further, the door and cover shall be attached at the intake of raw material without clearance.

Further, in the case where the door and cover is made hinge type, these shall be of such structure as to be detached simply and to be free from fissuring and clearance.

(7) The clearance between the top end of horizontal kneader agitating tank and the housing frame shall be not less than 100 mm.

(8) The projection opening for powder and grain bodies shall be detachable and also the parts of projection opening, of detachable structure.

(9) The projection opening of liquid raw materials shall be of sanitary structure to be detachable.

Further, the projection opening shall not protrude into the agitating tank, be attached to the agitating tank and cover, and suspending down type, not be used.

(10) The responsive device to be attached to the agitating tank surface shall be of such structure that no stain retains to be sealed or to be made capable of being detached easily.

(11) The agitating tank of horizontal kneader shall be complete in draining, and, attached with water exhaust pipe to be exposed simply or detached simply.

(12) In the case where part number is required as in heater and the like, it shall be stamped on the upper end surface of shank and sleeve.

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(13) The liquid raw material injection tube, valve and attachments shall be of sanitary decomposition type or of such type as not to cause blocking of raw materials. The end of such piping shall be of automatic water exhaust type and no check valve, be used therefor.

(14) The agitating tank and agitator of horizontal type kneader shall be capable of being washed by rotating the agitator in the agitating tank containing a small amount of water and, of such structure that it is able to exhaust water after washing simply.

(15) The space in which all surfaces can be cleaned shall be provided and its height, not higher than the height of eyes where the stains on upper surface can be confirmed.

3.1.3 Biscuit Kneader

3.1.3.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) It shall be of such structure that the grease supply can be conducted from the outer part without detaching the cover. The bearing part should, preferably, be of automatic oil supply device.

(2) At the inner part of covering lid, the grid state safety guard shall be attached. When this safety guard is detached, the interlock mechanism shall be made to actuate so as the agitating blades not to rotate.

(3) The operation of switch shall be of switching system of automatic and manual operations. It shall be of such structure that during actuation of interlock of (1) and (2) and during overturning of tank in automatic operation the agitating blades do not rotate.

(4) In the case where it is desired to rotate the agitating blades in the midway even during overturning of tank, change the transfer switch to manual switch and push two switches by both hands at the same time so as the inching operation to be capable. In this case, the two switches shall be set separately individually so that it is impossible to push two switches by both fingers of one hand at the same time.

(5) The emergency stop button shall be attached at the place where the worker is at the most near place to the working range.

(6) Rotary parts of gear, chain, and pulley shall be tightly closed completely.

(7) The foundation in which the overload at mixing time other than the machine weight is taken into consideration shall be applied.

(8) It shall be so made that the pressure does not become the set pressure or more at the times of supplying the cooling water and the warm water of jacket.

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3.1.3.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) For the part to contact dough, the corrosion resistant material shall be used.

(2) The packing part shall have the structure to prevent completely the leakage of dough and water content from the inner part, and in case where those leak to outer part due to consumption of package, the bearing part, be so made not to be affected.

Further, it shall be of such structure that the exchange of packing can be conducted simply.

(3) The inner parts of agitating tank shall not be made of dents for machine screw, bolt, etc. so as the dough not to adhere.

(4) The agitating tank and agitator shall be so made that it is possible to clean simply.

(5) The periphery of biscuit kneader shall be provided with the space capable of cleaning and maintenance.

3.2 Divider

3.2.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The pinch part or shear part to be generated by reciprocating motion or rotary motion shall be made such structure to protect the hand and fingers of worker from danger by enclosing all of them or providing protective devices.

(2) The guard of front surface of divider shall be so made that the regulation of dough weight can be conducted in the state not detached.

(3) The rear part of divider shall be so made that various dangers are excluded by applying protection by attaching complete cover to enclose all driving parts or by providing individual enclosures.

Further, the cover of rear part shall be so made that when the cover is opened the machine does not actuate by providing the interlock guard.

(4) The oil hole for knife at the rear part of divider shall be of such size that fingers of worker can not pass through the hole.

(5) The long groove hole of arm for knife driving at the rear part of divider shall be attached with saddle type preventive device or other protective device.

(6) The divider shall be provided with an overload safety device of mechanical or electrical instantaneous actuating type such as shear pin.

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3.2.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) Parts belonging to the piston shall not be at the food contacting parts.

(2) The system to feed the oil to the contact surface of dough, shall be so made that the oil tank is at a position where it is easy to approach for cleaning and the oil feed piping is movable easily and easy for cleaning.

(3) In the case where a box to enter dusting flour or exfoliation agent is installed, it shall have the lid and the box part, be of such structure as to be easy for cleaning.

(4) The belonging conveyor shall be of such structure that the belt is movable or detachable for cleaning.

3.3 Bean Jam Kneading Machine

3.3.1 Vertical Type Bean Jam Kneading Machine

3.3.1.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The stop switch shall be set in the range where the worker can reach with single hand from the position of projection of raw material.

(2) For the rod to connect the agitating shaft and agitating blade, projections such as bolts for preventing winding-in the cloth of worker shall not be used.

(3) The electric switch and timer to be used shall be moisture-proof.

(4) The driving parts of machine of such structure that its head part travels in right and left or up and down such as pulley, belt, transmission gear, clutch, etc. shall be attached with a sufficient cover securely.

Further, the strength and mechanism shall be taken into consideration so that there is no danger to the worker due to detaching down, folding breakage, etc.

(5) The double oven for steam shall comply with the specifications of JIS B 8243.

(6) In the case where a direct fire oven is used, the air flowing-in opening and gas exhaust opening of so sufficient size that incomplete combustion gas is not generated shall be provided.

3.3.1.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) The agitating blades shall be detachable easily for cleaning and, able to be assembled. The material of the blade shall be endurable against boiling sterilization.

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(2) In the case where metal is used for agitating rod, the corrosion resistant metal or the metal applied with sufficient corrosion preventive working shall be used.

(3) For the material and structure of machine part of upper part of raw material vessel, the material similar to that of food contacting part shall be used and it is preferable to make flat and smooth as far as possible and easy in washing.

(4) In the machine having mechanical rotary part at the upper part of raw material vessel, the lubricating oil to be used on the rotary part shall be the grease without taste, odor and environmental pollution for food.

(5) A so sufficient cover that the powder dusts or oil dusts of V-belt, chain, etc. do not mix-in the agitating substances shall be attached.

(6) The upper surface and flat surface parts of machine body and electric control board should, preferably, be at the position not higher than the height of eyes so as to be able to confirm the contamination.

3.3.2 Horizontal Type Bean Jam Kneading Machine

3.3.2.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The opening part of kneader shall be covered with a safety lid, and during the lid is opened the agitating blades, so made that the agitating blades do not rotate by means of an interlock mechanism.

(2) The inner part of covering lid shall be attached with a grid state safety guard. When this safety guard is detached, the interlock mechanism shall be so made to actuate so as the agitating blades not to rotate.

(3) The switch operation shall be of transfer system of automatic and manual operations. During automatic operation, during the interlock actuation of (1) and (2) and during overturning of the tank, it shall be of such mechanism that the agitating blades do not rotate.

(4) In the case where the agitating blades are desired to be rotated in midway even during overturning of tank, the inching motion shall be made capable by changing the transfer switch to manual operation and by pushing two switches by both hands at the same time. In this case, the two switches shall be set with individually separating so that the two switches can not be pushed at the same time by both fingers of single hand.

(5) The emergency stop button shall be attached at a place most near the working range by the worker.

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(6) The agitating blades, at the time of emergency, shall be stopped immediately by the push button switch. In this case, the brake motor attached with the interlock (attached with manual operation) shall be used.

(7) The driving part and movable part of overturning device shall be preserved in a box by the worker so as the hand and cloth not to contact directly, and the exposed parts such as cylinder, bearing, etc., be attached with the cover.

(8) The double oven for steam shall comply with the specifications of JIS B 8243.

3.3.2.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) Materials of food contact parts to be used shall be, in all, stainless steel (SUS 304) or that equivalent or superior thereto.

(2) The connecting part of agitating blade arm and the shaft and the seal part shall be of such structure that the detaching of them is easy and the washing and sterilization are easy.

3.4 Rice Cake Making Machine

3.4.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The rice cake making machine having automatic pounding hand reversing device shall be of such structure that the individual operation of pounding hand reversing is capable.

(2) The pounder to move up and down shall be of such structure that the hand fingers of the worker are not nipped.

(3) The safety guard shall be attached and the interlock mechanism by which the pounder is stopped when the guard is detached should preferably be provided.

3.4.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) In the case where the resin member is attached at the surface of machine or the surface is applied with coating, the resin member shall be free from toxity and so attached or applied with coating that fissuring, peeling off, etc. are not generated.

(2) The machine shall be of such structure that the leaked oil from the bearing part of pounder shaft does not drop down to foods or food contact parts.

(3) The pounding hand reversing device in the mortar shall be of such structure that its decomposition and assembly are easy and its sufficient washing is capable.

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3.5 Pie Roller

3.5.1 Safety Countermeasures Every sheeter of structure having two or more rolls for dough rolling shall be provided with the following safety devices.

(1) The safety guard bar to be set in this side in roll in direction shall be set at a position where insertion of hand is difficult in the case of ordinary operation.

Further, in the case of required, the interlock shall be of such structure that at the time when it is opened in large amount, the power is shut off automatically.

(2) In the case of (1), where the once stopped power is reput-in, it shall be of such structure that even the safety guard is closed, reinput of power must be conducted by operation of the switch.

(3) A circuit protective device to prevent the breakage of main electric motor and its circuit due to excess current shall be provided.

(4) In the case of returning the circuit of (3), it is desirable to carry out easily and quickly as far as possible (employing of automatic return, and the like).

3.5.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) In the case where the transmission chain and the like are poured with oil, it shall be of such structure that the oil is not scattered to the foods and food contacting parts.

(2) It shall be of such structure that the food refuse or stains adhered on the back face of scraper can be removed easily, comparatively.

(3) In the case where it is not used for a long period, for the purpose of preventing mould capable of being generated, the materials of belt for conveyance suitable thereto shall be used.

(4) In (3), in case of state where mould may be generated, the sterilization by chemicals is considered, and therefore the belt of substance endurable it with together shall be used.

(5) Bearing of hermetically closed type or equivalent thereto shall be used.

(6) For recovery of excessive hand flour and small dough pieces, detachable type receiving dish or falling-down type chute shall be provided.

(7) As to detaching and attaching of parts to be set for enlarging the purpose of use, those shall be of such structure that the worker can carry out cleaning easily.

3.6 Make-Up Machine

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3.6.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) In the structure where the filling device makes up the shape with moving in one direction or reciprocating, it shall be of such structure that the transfer operation of the worker can be confirmed.

(2) The make-up machine shall be of such structure that hand and the like can not be inserted.

(3) As to attaching and detaching part, the lightening should be designed and the sliding stop or the like so as it not to fall down from this side due to fats and oils or the like should preferably be taken into consideration.

3.6.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) The dough contacting part shall be of structure capable of being washed completely.

(2) The parts requiring washing shall be of such structure that the decomposition and attaching and detaching can be carried out easily.

3.7 Candy Making Machine

3.7.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The rotary part and slide part of machine as well as driving part of belt, chain, etc. shall be provided with safety cover so that the hand, fingers, etc. do not enter, as far as possible.

(2) It shall be of such structure that in (1) the workability and producibility are not hindered remarkably and at the same time the check, regulation, oil feed, cleaning, washing, etc. are not hindered.

(3) The rotary part extruding to outer part of machine (hand turning handle, and the like) shall be of such structure that it does not rotate with running out at the operation of machine.

(4) In the case where the mechanism to be actuated by air pressure and oil pressure is used, the interlock mechanism shall be provided without fail so that the error actuation is not caused by lowering of air pressure and oil pressure.

(5) The opening and closing safety cover shall, as required, be provided with interlock mechanism to be of such structure that when the cover is opened the machine does not actuate.

(6) The heating part by steam (double oven, cooker jacket, heating can, etc.) shall be attached with a safety valve which actuates when the set pressure is exceeded.

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(7) It shall be of such structure that protrusions, sharp ends, etc. do not exist on the surface of machine.

(8) At setting of machine, it shall be set horizontally, and as a rule, fixed by anchor bolts.

(9) The electric control operation board of every type shall be hermetical closed drop preventive type.

(10) The electric control operation board shall be set at a place where the worker can observe sufficiently and, of such structure the live part in the board can not be tached easily.

(11) The control board, operation board, electric appliances, cabinet panel, conduit tube metallic duct, etc. shall be applied with earthing work based on the Electric Facility Engineering Reference (Electric Industry Law Ministerial Ordinance) for the purpose of preventing electric shock or generation of disaster by electric leakage due to incomplete insulation or the fact that the part not to be charged is charged.

(12) The emergency stop devices of the number as required shall be set at a position where the hand of worker can reach easily.

(13) The circuit system shall be such that in case where service interruption is occurred during single-independent continuous operation, even though the service interruption is recovered, if the start switch is not reoperated, it does not actuate.

(14) The system shall be such that in cases of electric leakage, and overload, the abnormalities are alarmed and in case of overload the circuit is shut off.

3.7.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) The material of food contact parts shall, as a rule, be stainless steel (SUS 304) and in the case where, inevitably, general rolled steel material, bronze castings, etc. are used, corresponding to the using object, the surface treatment containing no toxic, nor harmful substances shall be applied.

(2) The matter necessary for function such as conveyor belt may be used exclusively in the case where the matter is confirmed that it is suitable for food sanitation.

(3) It shall be of such structure that the cleaning and washing can be carried out easily and dents, groove, etc. which are difficult in cleaning and washing are not provided.
In inevitable case, it shall be of such structure that the cleaning and washing can be carried out by detaching simply.

(4) The bearing and the like shall be provided at the outer part of food contact part to be sealed and, of such structure that the oil due to leakage does not intrude into the food and food contact part.

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(5) The part requiring oil feed and oil pouring shall be of such structure that even though the oil has leaked and dropped, it does not fall on food and food contact part.

(6) For the glass to be used for check window and lighting window, the heat resistant reinforced glass having sufficient strength shall be used.

3.8 Oven

3.8.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The roof and other part of oven shall have sufficient strength on structure and, be able to endure even though the worker has entered upper part and inner part of oven.

(2) In the case of mechanical type oven, the emergency stop device shall be provided at nearly the specific position of worker.

(3) Every piping shall be subjected to gas tightness test.

(4) The connecting part of oven shall not be soldered. For the oven to feed fuel or steam, screw thread joint, flanged joint or welding shall be used at the connecting part of piping.

(5) The main isolation valve shall be so set that it is able to be operated separately with the automatic actuating valve, and at the time of emergency it isolates the fuel or steam and in addition, be as follows:

(a) The main isolation valve shall be set at a portion where explosion, fire, etc. of oven are not generated in the neighborhood of this valve.

(b) The main isolation valve shall be of such structure that in the case where the worker enter the oven or when the oven is not actuating, it is able to lock at the close position.

(6) The protective device of gas initial fire, in the case where the protection of main fire flame of burner is not practical, shall be set at a place where if the initial fire does not pass the passage of main fire flame, it can not contact with the flame electrode. At the time of incomplete gas initial fire, the fuel feed to burner shall be shut off automatically.

(7) The oven of multiburner type shall be provided with individual atmospheric pressure type initial fire device which actuates by secondary air existing sufficiently in bread calcining chamber and feed gas or each burner, be provided with ignition device of electric spark type.

(8) In the case where the electric type ignition device having a heating capacity exceeding 40000 kcal/h per one burner is provided, it shall be protected by appending rapid speed type combustion safety device.

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Further, the combustion safety device to be used by connecting with electric type ignition device of oven shall be of such structure that explosive mixed gas is not accumulated in inside of oven before starting of ignition.

(9) In the case where fuel feed is carried out at line pressure, the safety isolation valve as the following shall be provided in the fuel tube in this side of burner.

(a) In the case where the fuel feed pressure becomes not less than the line pressure, a safety isolation valve shall be provided in the fuel line in this side of burner. However, except where other automatic valve is provided in the fuel feed line and if the compressor is stopped the fuel is made not to flow.

(b) The safety isolation valve of electric actuation shall be so made that the "close" position is the ordinary position and, be such structure that the shutting off of fuel feed is not dependent upon the electric actuation.

(c) In the case of reopening after the safety isolation valve has become "close", it shall be manual operation system.

Further, in the case of electric control system, it shall be such circuit that the reopening of the safety isolation valve is carried out also manually.

(d) The safety isolation valve of manual type reactuation style shall be of such structure that in the opening state it is impossible to lock from outer part.

(e) In the case where air for combustion is feed by a blower, at the time of incomplete air feed, interlock shall be carried out so as to close the safety isolation valve.

(f) In the case where gas ignition or electric ignition is used, the safety isolation valve is so made that at the time of incomplete ignition it is closed.

Further, in the case where the burner is provided with combustion safety device, at the time of incomplete flame of burner, the safety isolation valve shall be so made to be closed.

(10) In the case where the main fuel isolation valve of one manual operation type is provided at each oven, it shall be provided at this side of all other valves.

(11) The gas burner or oil burner having heating capacity exceeding 40000 kcal/h respectively shall be provided with safety device of flame actuation type.

Further, the actuation interval of safety device to be actuated by incomplete flame shall not exceed two seconds. The operation of restarting of burner in the case where the gas burner or oil burner is once isolated shall be manual.

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(12) Each space of oven having a fear of filling of explosive mixed gas (excluding direct fire type oven) shall be protected by providing explosion draft device. This explosion draft device shall be made of light weight materials applied with suitable insulating material.

(a) The rigid and heavy explosion draft device shall be fixed by chain or other suitable method, and scattering prevention of parts shall be conducted so as the injury is not to be given the worker at the time of explosion.

(b) In the case where the explosion draft device is provided at a place where the worker of oven or the worker in the neighborhood of oven may be given the injury by scattering parts and gas, for protection of inner parts and outer parts, the protective device made rigid or elastic body made of noninflammable material shall be used.

(c) In the case where in the heating system of oven even the fuel vessel is repeated with explosion, the fact that it is not deformed is guaranteed, the specifications of (a) and (b) do not apply.

(13) The oven (excepting electric heating type) shall be connected with the suitable, rigid chimney or broad flue as the following to feed out the combustion gas.

(a) The pipe or stand seat of chimney shall be supported suitably.

(b) The pipe of flue or the stand seat shall be of such structure that it does not enter with crossing the flue inner wall of chimney.

(c) The flue pipe shall be of such structure to prevent air permeation by jointing with the wall of chimney or covering with other method.

(d) The flue damper taken into consideration with the natural draft or other draft regulation device shall be provided.

(e) At the place where the damper is used, the limiting device at its lowest or highest point shall be provided at a suitable position. The lowest position of damper shall be so made that it is able to regulate so that the combustion air amount at the lowest output of oven can be obtained. In the case where the flue damper is connected with oil heating type oven or gas heating type oven, it shall be so made that when the damper is closed also the burner is stopped.

(14) In the case where the initial pressure of fuel is lower than the combustion air pressure, a check valve shall be so provided that the air does not back flow to the fuel piping. For example in the case of gas burner type device when the gas using pressure is lower than the air pressure, the check valve shall be provided in the gas piping at this side of mixing device.

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(15) In the case where the gas feed pressure is set rather higher than the set pressure at the oven, the following gas pressure regulator shall be provided.

(a) In the case where the gas pressure regulator is used, the gas pressure to feed to manifold shall be within 10 % of the consumption actuating pressure from the maximum to the minimum.

(b) The pressure regulator shall be of spring type, weight type or pressure balancing type. For the regulator of spring type or weight type, the spring or weight shall be put into a suitable housing. The weight-lever type regulator shall not be used in all cases.

(c) In the case of gas type pressure regulator, it shall be ventilated to atmospheric air in order to carry out good actuation with connecting with the atmosphere.

(d) At the outlet of pressure regulator for high pressure gas, a relief valve shall be provided. For the waste gas exhausted from this valve, the piping shall be provided so that it goes out to outside of building.

(16) The air chamber required to be connected with atmospheric air of diaphragm, bellows, etc. shall be separated from gaseous fuel or volatile fuel by using a flexible film and, connected with the outside atmospheric air by means of a pipe of at least 13 mm. This pipe shall be so made that it is filled with air by the causes of icing, moth, and others on the outside or does not become such state that incidentally stoppered. Therefore, at the end of pipe, downward T type double elbow type joint piping shall be carried out and a metal net, attached at the outlet. At the place where several air chambers adjacent to each other are used, this vent pipe may be the common pipe.

(17) In case where there is a fear to hinder the adequate actuation of mixer and burner due to accumulation of dust in air feed part, an adequate air pressure filter shall be attached at the inlet of air feed part.

Further, the preparatory air pressure filter shall be prepared so that the air pressure filter can be exchanged at the time of washing.

(18) The baking conveyor having a fear of hunting shall be attached with a hunting preventive device or a mechanism to correct the hunting.

(19) It should be preferable to set a device which shuts off the heat source and generates the alarm in case where the temperature in the furnace has rised abnormally.

(20) For the conveyor of oven to calcine the matters having a fear of falling down from the baking conveyor, the guide to prevent falling down from the conveyor surface should preferably be provided.

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(21) In the case of the oven having electric spark ignition device, the part where there is a fear for the personal hand to contact shall be of such structure that it is insulated sufficiently and even though a personal hand contacts accidentally the electric shock is not caused.

(22) In cases of cleaning, check, emergency stop and service interruption, the manual rotary device shall be provided.

(23) Each burner of oven shall be provided with an observation port for check by which the combustion state can be confirmed.

(24) The oven shall be installed on the noninflammable foundation. However, in the special case where it is inevitably installed on an inflammable floor, the bottom part of the oven shall be heat resistant and, the draft, made good by separating by 75 mm min. from the floor.

Further, the temperature of inflammable floor under the oven shall not exceed 70°C.

(25) The upper part of oven shall be applied with heat insulating member sufficiently.

(26) The place where the duct of oven or the chimney passes through the inflammable wall or ceiling shall be provided with a clearance, applied with heat insulating member and, so made that the inflammable member does not exceed 70°C.

(27) The post or structural member of building shall not be so made that it crosses the oven. In the case where these members approach the place at not more than 150 mm from the outer plate of oven, the pillar or structural member shall be so protected that their temperatures do not exceed 70°C by using heat insulating material.

(28) The gas combustion device shall be as follows:

(28.1) The injector of atmospheric pressure (low pressure) type gas combustion device shall be of such structure that the axis of injector and the center of gas injection coincide correctly and, so worked. The air regulator or shutter attached to the injector shall be fixed type or provided with a lock device so that the fixing after regulation does not vary incidentally.

(28.2) The damper for draft control of atmospheric pressure type gas combustion style oven shall be so connected with gas piping that when the damper is closed, the gas does not enter the burner, and in addition, be as follows:

(a) The tube type combustion burner intruded into the calcining chamber of atmospheric pressure type combustion style oven shall be attached with the secondary air duct over the whole length of lower part of burner. The air inlet of part of this duct shall be provided at the outer part of calcining chamber.

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(b) The flue damper of atmospheric press type gas combustion style oven shall be provided with a hole having diameter as given in Table.

Table. Holes to Be Provided at Flue Damper

Unit: mm

Flue diameter	Hole diameter
75 to 125	12.5
150 to 250	25.0
275 to 375	38.0

(28.3) The nozzle of atmospheric pressure type combustion style device or blast type burner shall be provided with the initial fire of gas or electric ignition device. However, as to the device having the adjusting function from the maximum to the minimum of flame and having the instantaneous actuation combustion safety device which actuates by the flame of main burner, for exclusively the first ignition, automatic or manual type torch ignition may be used.

(28.4) The multi hole tube type burner attached with many holes of ribbon shape, slit shape, chip shape or other similar style shall be so made that in the whole range where the flame becomes smaller over the whole length of burner or in whatever draft state generated during operation of oven, the stable flame can be obtained in all cases. However, except where independent of the fact that the gas amount to be fed to the burner is maximum or minimum, if the ignition place exists even only one place, immediately all holes are ignited.

(28.5) The burner for admixture gas shall be so made that in the range capable of operation of burner, there is no backfire nor fire extinguishing and in addition, be as follows:

(a) The multi-hole burner (for example, burner of ribbon type, strip type, chip type, etc.), in the case where the admixture gas system is used, shall be so made that over the whole range of length of burner the ignition at the same time is possible and it actuates in the normal state, or under the condition of oven containing steam, or in the state of oven to extinguish the flame.

(b) In the case where many burners for admixture gas are connected with single gas mixing device, the electric type or gas type ignitor shall be provided.

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(28.6) The high pressure gas injectors (using the gas of pressure exceeding 700 mmAq) shall be made such structure that the centers of axes of gas injectors are coincide, and, in addition, as follows:

(a) Between the injector for high pressure gas and the burner, valves and other interfering matters shall not be assembled.

(b) Each injector for high pressure gas shall be provided with a gas regulator individually used of a definite detachable type orifice or regulation type orifice. In the case where the regulation type orifice is used, the regulation screw threaded part shall be protected by using a plug having no gas leak.

(c) For the air regulation part of high pressure type injector, a secure lock method shall be employed.

(d) The attaching position of high pressure type injector shall be at a place where even during actuation of oven the air regulation is capable.

(e) The attaching position of high pressure type injector shall be at a place where neither backfire is caused, nor the worker is injured, nor the inflammable matter is ignited.

(f) In a high pressure type injector to be used for gas combustion device, in the case where the mixture of air and gas is fed by pressurizing, the air amount to be mixed in gas shall be made less and, used so as the mixed state of not more than upper limit of explosion not to be caused.

(g) As to the adjusting device (air pressure 350 to 1050 mmAq, the gas pressure at approximately at atmospheric pressure is used) of injector of low pressure, the adjusting device to determine the ratio of gas and air shall be provided with a secure lock device.

(28.7) Among the low pressure adjusting type injectors having zero-governor, the one which does not correct the resistance value of mixed gas pipe shall not be provided with a valve or other interfering matters between the injector and the gas burner.

Further, the air chamber of diaphragm of governor of low pressure adjusting type injector shall be ventilated to the outer part.

(28.8) The two-tube type system using pressurized air and gas shall not be attached with a valve and other interfering matter between the mixing valve and the burner. However, except where a over-pressure rise preventive device to the mixed pressure is provided.

Further, the two-tube type system shall be provided with a cleaning device before the air and gas enter the mixing device.

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(29) The gas mixing device shall be as follows:

(29.1) The burner receiving the feed of completely mixed gas by gas mixing device shall be provided with a flash flame preventive device in all.

This device shall have an automatic isolation valve to be attached as nearly at the burner as possible and also, provided at the outlet of premixer in this side of each burner isolation valve, and in addition, be as follows:

(a) The main mixing line and each appliance for gas shall be provided with a backfire preventive device and a relief valve.

(b) All of diaphragms and air chamber shall be connected with the atmospheric air outsides the building.

(c) The automatic safety isolation valve shall be provided before the mixing valve in gas piping. This position shall be before the inlet of compressor or near the gas feed part to isolate the in-flow to compressor.

(d) The air intake of gas mixing device shall be drawn-in by a pipe from a position of outer part of building and the air intake, provided with a dust preventive device.

(29.2) Between the blower for mixed gas and the burner, the valve and other interfering matter shall not be provided. The blower for mixed gas shall be as follows:

(a) The blower for mixed gas is the device to feed out the mixture of gas and air, and shall be of such structure that the feed-out is not stopped and backfire is not caused over the whole regulating range of its amount.

(b) The blower for mixed gas shall be provided with a pressure regulating device as the variation preventive use of air to gas ratio at a gas pipe part of mixing valve inlet.

(c) The body of blower for mixed gas shall be of such structure that even an explosion is generated in inside, it can endure sufficiently.

(d) The blower for mixed gas shall be provided with an automatic isolation valve in the piping at this side of blower. This isolation valve shall be so made as to actuate immediately at the time of abnormality of gas pressure and when the passing of current is stopped.

(30) The oil combustion device shall be as follows:

(30.1) The oil burner shall be the one specified in JIS B 8404, JIS B 8405 and JIS B 8406 and in addition, as follows:

(a) The oil burner shall be provided with electric ignitor or gas initial fire device.

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(b) The oil burner shall be provided with a rapid speed combustion safety device which actuates by the flame of main burner to prevent incomplete flame and excessive flowing out of oil. The actuating time for isolation of oil actuating against incomplete flame shall be such a short time that a mixed state having a fear of explosion is caused or the fuel oil does not enter the combustion device until the dangerous amount. However, except the oven of not more than 40000 kcal/h having a combustion safety device specified in JIS B 8415.

(c) The isolation of fuel feed shall be able to be carried out by stopping individual burner pump having pressure isolation valve or by closing the corresponding valve.

(d) The oil combustion type oven shall be provided with a damper and, of such structure as to feed a small amount of air into the furnace at all times.

(e) The oil burner shall be able to be drawn out from the furnace (for check and the like) and, provided with an interlock so as the burner not to start actuation at the time of drawing out.

(f) In the case where the preheating of oil is required, it shall be controlled by means of a thermostat by using a steam, warm water or electric heater. These heaters shall be of such structure that all joint parts are free from oil leakage. The attaching position of thermometer shall be at a place suitable for display of temperature of heating oil. The prevention against generation of abnormal pressure shall be carried out by bypass and other suitable method.

(g) The oil burner provided with mechanical type air feed device shall be provided with an interlock between the air feed system and the oil feed system so that if air is not feed it does not actuate so as the burner to become normal combustion state.

(30.2) The high pressure micro-pulverizing oil burner shall be provided with a pressure isolation valve between the pump and the nozzle.

(30.3) The air type micro-pulverizing burner having a regulating device from the maximum up to the minimum and of system to cut the ignition device after completion of ignition shall be provided with a rapid flame safety device directly connected with the flame of main burner.

(30.4) The mechanical type micro-pulverizing burner of rotary style to actuate by "open" and "close" control shall be provided with a safety device to be actuated by main burner.

(30.5) The gasification type burner shall be of structure of system of which air damper opens before the oil enters the burner.

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(30.6) The burner receiving oil feed according to gasification system shall be provided with a protective type gas initial fire or electric type initial fire. In gasification type heating device, the burner shall be protected according to the specification of (29).

(31) The electric heating device shall be as follows:

(a) The heating member exposing in the calcining chamber shall be attached with a protecting device to protect so as the completed products, worker, electric appliances, etc. not to contact incidentally.

(b) The cut-off switch or circuit breaker shall be attached at a position where the hand reaches easily. The main switch or circuit breaker shall be provided with a lock device so that in the case where the other working is carried out on the electric device or in the oven, it is able to lock at the position of "close".

(32) The direct-fire type oven shall be as follows:

(a) The direct-fire type oven shall be provided with a safety protective device in order to cope with fuel, air, or incomplete ignition.

(b) The direct-fire type oven having heating capacity exceeding 40000 kcal/h shall draft-exhaust before the ignition device, blower for combustion air and fuel start the actuation so that after pause of operation, no gas is accumulated and no explosion is caused. This preventilation shall be so made that the air in the oven is exhausted to outside of building so that the air in calcining chamber is varied at least four times, and the new, fresh air is taken-in. In the case where the heating device is shut off to be stopped by safety device, this preventilation shall be repeated without fail.

(33) The direct-fire circulation type oven shall be as follows:

(a) Each fan for circulation of direct-fire circulation type oven shall be so made that at the time of stopping of fan the fuel is isolated by the safety valve interlocked with the burner.

(b) The flame part of direct-fire circulation type oven or the burner shall be provided with a flame-sensitive safety device to actuate instantaneously so that when the burner is incomplete the fuel feed is isolated automatically.

(c) The direct fire circulation type oven shall be provided with preventilation device.

(d) The fan of direct fire circulation type oven shall be constituted of suitable materials to the actuating temperature and, employed with sufficient factor of safety for prevention of rupture of impeller.

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(e) The impeller of direct fire circulation type oven shall be so made that it does not contact with the flame of burner or directly with the burner.

(f) The fans of direct fire circulation type oven existing in the oven and on the oven shall be provided with temperature limiting device for overheat preventing.

(g) In the case where the burner of direct fire circulation type oven is attached at a high position, a fixed type stage shall be provided so that it is able to approach to the burner part safely and easily.

(34) The oven of indirect heating multi-burner type shall be provided with safety isolation valve to interlock the ignition device, air pressure part and gas pressure part.

(35) The indirect heating circulation type oven shall be as follows:

(a) All of oil burners or gas burners of indirect heating circulation type oven shall be provided with a flame sensitive safety device of instantaneous actuating type.

(b) The duct device of indirect heating circulation type oven shall be provided with an explosion time ventilation device of not less than 0.1 m^2 in total area. The position of this explosion time ventilation device shall be at a place where hot gas or scattering parts do not fly out toward the worker.

(c) The fan and other parts of indirect heating circulation type oven shall be in accordance with the specifications of (17), as appropriate.

(36) The electric type oven shall be installed, operated, and maintained in accordance with the specifications of 3.4 of JIS B 9650 and (34) of this Standard, as appropriate.

3.8.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) The furnace floor of wire mesh and metal band traveling type shall be provided with a mechanism capable of cleaning always the calcining surface even during working.

(2) The guide shall be attached so that the oil fed chain does not contact the products.

(3) The traveling chain shall be of such structure that even in the case where graphite, and other lubricant is excessive, it is not affected thereby and moves smoothly always.

(4) It shall be of such structure that the oil feed to the traveling chain is able to be carried out at a place other than the sprocket.

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(5) The door for repairing shall be attached directly with the oven furnace body so that it is able to see the whole inside part of oven, and the height of lower part of door for cleaning of band oven, made same as the height of oven furnace floor.

(6) All surfaces having capability of accumulation of fallen crumbs and toppings shall be so made that hand can be reached easily and the cleaning can be carried out.

(7) The check window shall be capable of being repaired easily or being detached and further the shutter used of heat resistant members, attached.

(8) All lightings shall be of housing style in order to have moisture resistance and, attached with a shutter by heat resistant attaching device for prevention of rupture.

(9) The dust van to receive crumbs and toppings falling down from the clearance part of outlet and inlet parts of oven shall be prepared. The dust van shall be able to be detached simply and, of such size that it is capable of being transported to discard the dust.

(10) The outer surface cover excepting the heat insulating plate shall be capable of being detached easily. The cover shall be attached at a position where its lowest part is not less than 50 mm from the floor surface.

(11) The fan device for convection passing through outside or inside of oven furnace body to calcining chamber shall be of such structure that the sweeping, cleaning and repairing are carried out easily.

(12) The heating device of oven shall be of such structure that the intrusion of ash and sooty smoke into the calcining chamber is prevented.

(13) All nonmetallic materials to be used as the structural member of calcining furnace floor shall be free from convex and dent, fissuring, groove, etc. on the surface.

(14) For the coating of inner parts such as ceiling part, upper parts of inlet and outlet, etc., the heat resistant material not to be fissured nor peeled off and containing no toxic matters shall be used.

(15) The insulating material or heat insulating material of piping shall be easy in cleaning and nonpermeable for moisture. The surfaces of all insulating materials or heat insulating materials shall be of hard finishing and be capable of being cleaned simply.

(16) The ceiling surface of oven shall be hard finished so as to be easy in cleaning.

(17) The chimney of oven shall be so attached that its horizontal part becomes shortest.

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(18) The chimney of oven shall be so completely joined that the adhering matters and the like do not leak from the joints. All connecting parts shall be so hermetically closed that the attaching metal fittings and the like do not protrude into the inside of chimney.

(19) The chimney of oven shall be provided with traps for cleaning and accumulated solid matters.

(20) The oven shall be provided with the sufficient interval from other facilities, wall surfaces, etc. to be easy in repairing of oven.

(21) The conduit tube to be attached side surface of oven and all pipings shall be attached with separating by not less than 50 mm from the side surface of oven by using independent attaching metal fittings.

Further, the pipings to be attached to the ceiling part of oven shall be attached by separating by not less than 200 mm from the ceiling surface by using the similar method.

(22) The oven frame part and housing part of conduit tube contacting the floor surface shall be hardened or sealed completely by flowing concrete.

(23) The pit for rotary drum of band oven shall be provided with sufficient space so as to be able to carry out easily the repairing.

(24) The steam for blowing into the furnace to be used during calcining shall be so made that toxic substances are not contained.

(25) The drain and exhaust water over flow from steam feed device of oven shall be exhaust with removing gas bubbles.

3.9 Frier

3.9.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The oil tank, in either cases of throttling working or welding working, shall be of such structure that the change of material quality and deformation by heat or oil are not generated.

(2) In the case of gas combustion system, the emergency isolation valve shall be provided in the piping system to have such function to actuate the emergency isolation valve by detecting the abnormal gas pressure, abnormal combustion and abnormal high temperature.

(3) The electric heating type shall have functions for abnormal high temperature detection and electric leakage protection.

(4) The check window and panel shall be of material difficult in rupture.

(5) In the case of setting upper part hood, it shall be at the height not interfering the worker.

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(6) The duct for hood shall be provided with a damper attached with a thermal fuse.

(7) The exhaust duct for combustion and the one for hood shall be provided independently, respectively.

(8) In the case of gas combustion system, earthquake sensitive device shall be provided to actuate the emergency isolation valve of (2).

3.9.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) The passing part of products shall be capable of detaching the feed conveyor, lifting net, etc. for cleaning and, be easy.

(2) The oil drawing-out device of oil tank shall be of such structure capable of being carried out completely.

(3) The piping for oil circulation shall be used of joints so that the decomposition and assembly can be carried out easily.

(4) In the case of depositor is provided, the hopper shall be attached with the lid.

Further, the pressurizing type using compressed air shall be of such mechanism that the lubricating oil of compressor does not mix-in.

(5) The interval between the frier and the set floor surface shall have a air layer of 150 mm or more.

(6) The chimney, duct, hood and canopies for outer part exhausting shall be attached with the filter so as foreign matters from outside not to enter and, be of such structure as to be easy in detachment for cleaning.

(7) The oil reservoir shall be provided at the lower part of hood and, of such structure that its handling for cleaning is easy.

(8) The connecting part of hood and duct shall be provided with a filter and, of such structure that its handling for cleaning is easy.

Further, the attaching part of filter shall be of oil drop preventive structure.

3.10 Slicer

3.10.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The slicer shall be provided with a device to feed all the last loaf to the slice blade parts.

(2) In the case where, when the cover of blade frame of reciprocating blade type slicer is detached, the blade part is exposed, the interlock device shall be provided at that place and when the cover is not at a definite position, the machine shall be made so as not to start the motion.

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(3) The slicer having endless band type blades shall be provided with a brake which actuates automatically by electricity or other action at each electric motor so that it actuates during the electric motor is stopped.

Further, when the door, panel, etc. adjacent to the blade edge are not closed, the electric motor shall be so made as not to rotate.

(4) In the case where the slice blade is required to be ground on the machine, the guard shall be provided with remaining a space sufficient for the grinding stone to reach the blade part.

(5) The pinch part at a place where the pusher finger attached to the chain for feeding enters the bed plate of perpendicular direction feed device shall be covered.

(6) In the case where the manufacturers of packaging machine and the slicer are different, at the time of installation and connection, the chain, sprocket, belt, and other motion parts shall be provided with the suitable protection. In this case, for connecting wire of starting and stopping devices mutually, the safe wire shall be used.

(7) For the chain for horizontal feed, the side surface parts excluding the front part and upper part shall be covered completely.

(8) The materials to be used for check opening and the like shall be those of breaking resistance and moisture preventive property.

3.10.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) The door, lid, induction grooves for check opening or the guide shall be of such structure that the accumulation of micro-powders of product, condensates, spilt matters, foreign substances is made minimum and the cleaning can be carried out easily.

(2) The side surface, upper surface and other peripheral surface of slicer shall be applied with protective cover film for corrosion prevention and so as not to absorb the raw materials.

3.11 Bean Jam Wrapping Machine

3.11.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The rotary part of hopper shall be applied with a stopper at the times of operating and traveling of machine so as to be able to fix.

(2) In the case where the machine is attached with castors, the machine body shall be so made that it is able to be fixed.

(3) The electric motor shall be preserved in inside of frame of machine or in the case where it is exposed to outside part it shall be totally enclosed type or totally enclosed fan-cooled type.

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(4) The driving part of transport-out conveyor shall be provided with a fixed guard for avoiding risk for fingers and hand to be wound-in.

(5) The rod gear part of piston support shall be provided with fixed guard.

3.11.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) The feed out screw of inner wrapped member (piston), cylinder, and flow regulating case shall be detachable type and, made so that it is capable of being detached easily.

(2) Product transport-out conveyor and conveyor plate shall be of detachable type and, made so that the washing is possible.

3.12 Depositor

3.12.1 Safety Countermeasures The pinch part or shear part to be generated by reciprocating motion or rotary motion shall be enclosed by a safety guard.

3.12.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) The food contact part shall be of such structure that it is able to be detached easily for cleaning.

(2) The hopper shall be provided with a detachable lid.

3.13 Injector for Decorative Arrangement

3.13.1 Make-up Table

3.13.1.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The guillotine cutter part shall be provided with a safety guard and, of such structure that the hand and a part of personal body do not reach the dangerous portion.

Further, the safety guard capable of being opened and closed shall be provided with an interlock device to be such structure that if the guard is opened the cutter motion is stopped incidentally.

(2) The rotary cutter shall be provided with a safety guard.

(3) The rolling roller shall be provided with a safety guard.

(4) The dough winding-in device shall be provided with a safety guard at its rotary part.

(5) The circular cutter shall be provided with a safety guard.

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(6) Each type option to be set on the make-up table shall be made complete in fixing by bolt fastening to be such structure that it is not loosened by vibration or travelling of belt.

3.13.1.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) Each type option on the table shall be of such structure that it is detachable or capable of being cleaned by approaching easily.

(2) The receiving box of scrap dough shall be of structure capable of being detached easily.

3.13.2 Injector for Decorative Arrangement

3.13.2.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The upper part of hopper shall be provided with a safety guard capable of being opened and closed so as the hand and the like not to reach the dangerous place.

This guard shall be provided with an interlock device to be of such structure that when the guard is opened the motion of machine is stopped.

(2) The travelling part of injection needle shall be provided with a safety cover to prevent that the hand receives injury by tip of injection needle.

(3) The reciprocating part of piston shall be provided with such a safety cover that hand and fingers do not enter.

3.13.2.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) The food contact part shall be made such structure that it is capable of being detached easily for cleaning and refuses of foods are not accumulated.

(2) The hopper shall be provided with a lid so that dusts do not enter.

(3) For the food contact part the corrosion resistant material shall be used.

(4) The injection needle shall be so made that it is detachable and capable of being cleaned.

3.14 Dough Cutting Machine for Rice Crackers

3.14.1 Safety Countermeasures The safety countermeasures shall be as follows:

(1) The rotary shaft, blades, etc. shall be made such structure that the check, regulation, repairing, washing and cleaning can be conducted easily in a safe condition.

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(2) It shall be of such structure that at the time of maintenance and repairing the attaching parts of blades and rice cake and rice cake feed device are capable of being attached and detached safely and easily.

(3) The blade cover and safety guard shall be so provided that the worker does not contact the blade during actuation.

(4) The reciprocating-motion cutting device shall be secured with a sufficient distance so that the hand does not reach the blade absolutely even the hand is inserted in the rice-cake feed part or, provided with feed-in rollers.

(5) The interlock device shall be so provided that when the blade cover and safety guard are not closed completely the machine does not actuate.

(6) The emergency stop switch shall be set at a portion where it is able to reach quickly and safely from the working position. As required, those shall be set at plural portions.

3.14.2 Sanitation Countermeasures The sanitation countermeasures shall be as follows:

(1) The blades, rice-cake attaching part and rice-cake feed device shall be of such structure that the decomposition and assembly is easy and capable of being cleaned sufficiently.

(2) For the blades of food contact part, rice-cake attaching part and rice-cake feed device, stainless steel or the material equivalent thereto in quality should preferably be used.

(3) The bearing part shall be of such structure that the lubricating oil does not enter the food contact part due to leakage.

(4) The corner parts of food contact parts shall be made smooth surface structure by rounding of not less than 6 mm.

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